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# United States Patent [19] Rhoads

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## [54] **COMPUTER SYSTEM LINKED BY USING INFORMATION IN DATA OBJECTS**

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[\*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

This patent is subject to a terminal disclaimer.

[21] Appl. No.: **08/746,613**

[22] Filed: **Nov. 12, 1996**

### **Related U.S. Application Data**

[63] Continuation-in-part of application No. 08/649,419, May 16, 1996, Pat. No. 5,862,260, and a continuation-in-part of application No. 08/508,083, Jul. 27, 1995, Pat. No. 5,841,978, and a continuation-in-part of application No. PCT/US96/06618, May 7, 1996.

[51] **Int. Cl.<sup>7</sup>** ..... **G06K 9/36**

[52] **U.S. Cl.** ..... **382/233**

[58] **Field of Search** ..... 358/85, 86, 400, 358/402, 403, 407, 442; 379/94-98, 100, 112-114, 118, 127, 105; 380/3, 4, 5, 9, 16, 22, 23, 25, 49, 50, 54; 382/100, 112, 115, 232, 233, 236, 244, 248, 254, 280, 287

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### [57] **ABSTRACT**

Various improvements to steganographic systems, and applications therefore, are disclosed. The improvements include facilitating scale and rotation registration for steganographic decoding by use of rotationally symmetric steganographically embedded patterns and subliminal digital gratitudes; improved techniques for decoding without access to unencoded originals; improving robustness of steganographic coding in motion pictures and/or in the presence of lossy compression/decompression; and representing data by patterned bit cells whose energy in the spatial domain facilitates decoding registration. Applications include enhanced-security financial transactions, counterfeit resistant identification cards, fraud deterrent systems for cellular telephony, covert modem channels in video transmissions, photo duplication kiosks with automatic copyright detection, and hot-linked image objects (e.g. with embedded URLs) for use on the internet.

### **5 Claims, 51 Drawing Sheets**

Microfiche Appendix Included  
(13 Microfiche, 1077 Pages)

